REMARKS

Claims 1-9, 11-21 and 32 stand rejected. Claim 10 stands objected based on a rejected base claim. Claims 1 and 32 have been amended. New claims 33 and 34 have been added. The Applicant respectfully requests reconsideration in view of the foregoing amendments. No new matter has been added.

Allowable Subject Matter

Applicant thanks the Examiner for providing an indication that claim 10 would be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims. At this time, the Applicant forgoes amendment of claim 10 in view of the following remarks.

Rejections under 35 U.S.C. §102

The Examiner rejected claims 1-7 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent 6,031,960 ("Lane et al").

With respect to claim 1 as now amended, the claimed invention features a method for processing digital video data for trick-mode display, said digital video data having an ordered sequence of frames, said method comprising: (i) specifying a range of delivery intervals; (ii) selecting a set of frames from said ordered sequence of frames, each frame in said selected set including data representative of a selected image and associated with a corresponding delivery interval; and (iii) for each frame in the selected set, generating a modified frame for trick mode display according to whether the corresponding delivery interval of said selected frame is less than a lower bound of the range or greater than an upper bound of the range, said modified frame including data representative of said selected image modified for delivery at a delivery interval within said range of delivery intervals. Claim 32 is also similarly amended. Support for these claim amendments can be found at least on page 2, line 28 through page 3, line 7; FIG. 5; page 8 line 1 through page 10, line 15.

Accordingly, the invention as recited in claim 1 provides for a smooth display of digital video data in trick mode by specifying a range of delivery intervals for the frames that are to be displayed. With the delivery intervals being substantially equal as recited in new claims 33 and 34, images to be displayed in trick-mode are provided to a display device at a substantially uniform rate. This enables the display device to display each frame for substantially the same amount of time.

Lane et al do not teach or suggest at least the features of specifying a range of delivery intervals and generating a modified frame for trick mode display including data representative of a selected image modified for delivery at a delivery interval within the specified range. Rather, Lane et al discuss methods and apparatus for generating or correcting timing signals (i.e. PCR, PTS, and DTS) embedded within a trick play data stream as a function of the trick play speed in order to comply with preselected data standards, and particularly the MPEG-2 standard. (See Abstract)

The Examiner points out that in Lane et al data reduction operations may be performed on selected frames (col. 5, lines 32-45) and PCR packets may be added to a trick play data stream (col. 12, lines 6-55). However, Lane et al do not teach or suggest performing these operations such that the delivery intervals of the modified frames fall within a specified range. Lane et al merely suggest that data reduction operations may be performed to increase the recovered data rate during trick mode operation. Lane et al also suggests the insertion of additional PCR packets within a trick play data stream to satisfy MPEG requirements when trick playback operation is performed at a speed that is less than the speed the trick play data was encoded. In either case, Lane et al do not specify a range in which the delivery intervals of the modified frames must fall in order to provide for a smooth trick-mode display, as now recited in claims 1 and 32.

For at least these reasons, it is believed that claims 1 and 32 as now amended are not anticipated by the prior art of record and should be patentable.

By virtue of at least their dependency from claim 1, it is also believed that claims 2-7 are also patentable.

Rejections under 35 U.S.C. §103

The Examiner rejected claims 8, 9, 11-17 and 32 under 35 U.S.C. §103(a) as being unpatentable over Lane et al in view of U.S. Patent 6,219,381 ("Sawada et al")

The Examiner rejected claim 18 under 35 U.S.C. §103(a) as being unpatentable over Lane et al in view of U.S. Patent 5,585,931 ("Juri et al")

The Examiner rejected claims 19 and 20 under 35 U.S.C. §103(a) as being unpatentable over Lane et al in view of U.S. Patent 6,058,240 ("McLaren").

The Examiner rejected claim 21 under 35 U.S.C. §103(a) as being unpatentable over Lane et al in view of U.S. Patent 5,687,275 ("Lane et al (2)").

As previously discussed, Lane et al do not teach or suggest at least the features of specifying a range of delivery intervals and generating a modified frame for trick mode display including data representative of a selected image modified for delivery at a delivery interval within the specified range as recited in claims 1 and 32. Neither Sawada et al, Juri et al, McLaren, nor Lane et al (2) teach or suggest these features.

Specifically, Sawada et al do not teach or suggest at least the feature of generating a modified frame for trick mode display according to whether the corresponding delivery interval of said selected frame is less than a lower bound of the range or greater than an upper bound of the range. Rather, Sawada et al discuss a method of processing trick play data in which, for all frames, the data in each frame is first reduced and then padded to a single maximum size. Thus, in Sawada, a selected frame associated with a corresponding delivery interval that is less than a lower bound of the range will be degraded unnecessarily to generate the modified frame. In contrast, the method and apparatus as recited amended claims 1 and 32 generate the modified frame according to whether the corresponding delivery interval of the selected frame is greater than or less than the specified range of intervals.

Juri et al discusses a video signal recording apparatus is provided with a variable length coding unit for producing data blocks of uneven length. (See Abstract) McLaren discusses a method for generating an MPEG compatible digital image representative signal which when recorded facilitates reproduction at more than one speed. (See Abstract) Lane et al (2) discusses methods of operating a digital video recording and playback device to identify trick play data by recording headers containing specific trick play information along with the trick play data. (See Abstract) Neither Juri et al, McLaren, nor Lane et al (2) teach or suggest at least the features of specifying a range of delivery intervals and generating a modified frame for trick mode display including data representative of a selected image modified for delivery at a delivery interval within the specified range as recited in claims 1 and 32.

For at least these reasons, it is believed that amended claims 1 and 32 are novel and non-obvious in view of the prior art of record and should be patentable.

By virtue of at least their dependency from claim 1 and the additional features claimed therein, it is also believed that claims 8, 9, and 11-21 are also patentable.
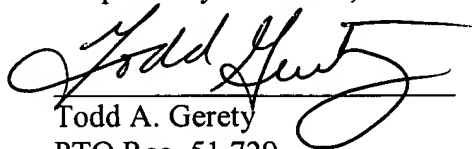
CONCLUSION

In view of the above amendments and remarks, it is believed that claims 1-21 and 32-34 are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

Date: December 15, 2005

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